WHAT IS CLAIMED IS:

1. An apparatus for preparing an eyeglass lens, comprising:

a first mold member having a casting face and a non-casting face;

a second mold member having a casting face and a non-casting face, the second mold member being spaced apart from the first mold member during use such that the casting faces of the first mold member and the second mold member at least partially define a mold cavity;

a coating unit for applying a coating to at least one of the mold members or the eyeglass lens during use; and

a lens curing unit configured to direct activating light toward the mold members during use;

wherein the lens curing unit and the coating unit are substantially contained within a single enclosure.

2. The apparatus of claim 1, wherein the apparatus is configured to form non-photochromic lenses and photochromic lenses.

3. The apparatus of claim 1, wherein the apparatus is configured to substantially simultaneously apply a coating to the first and second mold members disposed within the coating unit and direct activating light toward another pair of mold members disposed within the lens curing unit.

4. The apparatus of claim 1, wherein the coating unit is a spin coating unit.

5. The apparatus of claim 4, wherein the spin coating unit comprises:

a holder for holding the eyeglass lens or at least one of the mold members, wherein the holder is configured to revolve during use; and

an activating light source configured to direct activating light towards the coating unit during use.

6. The apparatus of claim 5, wherein the holder is configured to revolve such that coating material is radially dispersed during use.

7. The apparatus of claim 5, wherein the activating light source is an ultraviolet light source.

8. The apparatus of claim 5, wherein the activating light source has a peak light intensity at a range of about 200 nm to about 300 nm.

9. The apparatus of claim 5, wherein the activating light source comprises a substantially linear light element.

10. The apparatus of claim 5, wherein the holder is configured to rotate up to about 1500 revolutions per minute.

11. The apparatus of claim 1, further comprising a cover for covering the coating unit, wherein an activating light source for use with the coating unit is positioned on an inner surface of the cover.

12. The apparatus of claim 1, wherein the lens curing unit comprises a first light

source configured to generate and direct activating light toward at least one of the mold members during use.

13. The apparatus of claim 12, wherein the first light source is configured to direct activating light toward the first mold member, and wherein the lens curing unit further comprises a second light source configured to generate and direct activating light toward the second mold member.

14. The apparatus of claim 13 wherein the first and second light sources are configured to generate and direct a pulses of activating light toward the mold members.

15. The apparatus of claim 12, further comprising a filter disposed directly adjacent to at least one of the mold members, the filter being configured to manipulate an intensity of the activating light directed toward the mold members during use.

16. The apparatus of claim 15, wherein the filter is a hazy filter comprising a varying thickness such that the filter varies an intensity distribution of activating light directed across the mold members during use.

17. The apparatus of claim 15, wherein the filter is a liquid crystal display filter.

18. The apparatus of claim 12, further comprising an air distributor configured to apply air to the mold members during use.

19. The apparatus of claim 12, wherein the first light source comprises a fluorescent light source configured to emit light at a wavelength of about 385 nanometers to 490 nanometers.

20. The apparatus of claim 12, wherein the lens curing unit comprises a lens drawer for positioning the mold members proximate to the first light source, the lens drawer being configurable to be inserted within and removed from the irradiation chamber.

21. The apparatus of claim 1, further comprising a post-cure unit, the post-cure unit configured to simultaneously apply heat and activating light to the interior of the post-cure unit.

22. The apparatus of claim 21, wherein the post-cure unit comprises a fluorescent light.

23. The apparatus of claim 21, wherein the post-cure comprises a heater, the heater configured to heat the interior of the post-cure unit to a temperature of up to about 125 °C.

24. The apparatus of claim 21, wherein the post-cure unit comprises a conductive heating apparatus, the conductive heating apparatus being adapted to conductively apply heat to a face of at least one of the mold members during use.

25. The apparatus of claim 1, further comprising a programmable controller configured to substantially simultaneously control operation of the coating unit and the lens curing unit during use.

26. The apparatus of claim 1, further comprising a programmable controller configured to adjust a dose of the activating light reaching the mold member as a function of the temperature of the mold members.

27. The apparatus of claim 1, further comprising a programmable controller

configured to vary an intensity of the light as a function of the temperature of the molds.

28. The apparatus of claim 1, further comprising a programmable controller configured to control operation of the lens curing unit using a Proportional-Integral-Derivative control scheme.

29. The apparatus of claim 1, further comprising a programmable controller and a light sensor configured to measure the dose of light transmitted to the mold cavity, and wherein the light sensor is configured to communicate with the programmable controller, and wherein the programmable controller varies the intensity or duration of light such that a predetermined dose is transmitted to the mold cavity.

30. The apparatus of claim 1, wherein the lens curing unit comprises a first light source and a second light source, and further comprising a programmable controller configured to individually control the first and second lights.

31. The apparatus of claim 1, further comprising a cooling fan for cooling the mold members during use and a thermocouple for measuring a temperature of the mold members during use, and further comprising a programmable controller configured to operate the cooling fan in response to the temperature of the mold members as measured by the thermocouple.

32. The apparatus of claim 1, wherein the coating unit is a spin-coating unit, and further comprising a programmable controller configured to control a rate of rotation of a holder of the spin coating unit.

33. The apparatus of claim 1, further comprising a post-cure unit, the post-cure unit

configured to simultaneously apply heat and activating light to the interior of the post-cure unit, and further comprising a programmable controller configured to substantially simultaneously operate the coating unit, the lens curing unit, and the post-cure unit.

34. The apparatus of claim 1, further comprising a programmable controller configured to control operation of the lens curing unit as a function of the eyeglass lens prescription.

35. The apparatus of claim 1, further comprising a liquid crystal display positioned between an activating light source and one of the mold members, and further comprising a programmable controller configured to change the filter in response to the prescription of the eyeglass lens.

36. An apparatus for preparing an eyeglass lens, comprising:

a first mold member having a casting face and a non-casting face;

a second mold member having a casting face and a non-casting face, the second mold member being spaced apart from the first mold member during use such that the casting faces of the first mold member and the second mold member at least partially define a mold cavity;

a lens curing unit configured to direct activating light toward the mold members during use; and

a post-cure unit configured to apply heat and activating light to the eyeglass lens.

37. An apparatus for curing an eyeglass lens, comprising:

a first mold member having a casting face and a non-casting face;

a second mold member having a casting face and a non-casting face, the second mold member being spaced apart from the first mold member during use such that the casting faces of the first mold member and the second mold member at least partially define a mold cavity;

a coating unit configured for applying a coating to at least one of the mold members or the eyeglass lens during use;

a lens curing unit configured to direct activating light toward the mold members during use;

a post-cure unit configured to apply heat and activating light to the eyeglass lens; and

a programmable controller configured to substantially simultaneously control operation of the coating unit, the lens curing unit, and the post-cure unit during use.

38. A system for preparing an eyeglass lens, comprising:

a first mold member having a casting face and a non-casting face;

a second mold member having a casting face and a non-casting face, the second mold member being adapted to be spaced apart from the first mold member during use such that the casting faces of the first mold member and the second mold member at least partially define a mold cavity;

a lens forming composition adapted to be disposed within the mold cavity during use, comprising:

a monomer that cures by exposure to activating light to form the eyeglass lens during use;

a photoinitiator that initiates curing of the monomer in response to being exposed to activating light during use;

a coating unit for applying a coating to at least one of the mold members or the eyeglass lens during use; and

a lens curing unit configured to cure at least a portion of a lens forming composition into the eyeglass lens by directing activating light toward mold members during use.

39. The system of claim 38, wherein the lens forming composition further comprises photochromic compounds.

40. The system of claim 38, wherein the lens forming composition further comprises ultraviolet/visible light absorbing compounds.

41. The system of claim 38, wherein the apparatus is configured to substantially simultaneously apply a coating to a first set of mold members and direct activating light toward a second set of mold members.

42. The system of claim 38, wherein the coating unit is a spin coating unit.

43. The system of claim 42, wherein the spin coating unit comprises:

a holder for holding the eyeglass lens or at least one of the mold members, wherein the holder is configured to revolve during use; and

an activating light source configured to direct activating light towards the coating material during use.

44. The system of claim 43, wherein the holder is configured to revolve such that coating material is radially dispersed during use.

45. The system of claim 43, wherein the activating light source is an ultraviolet light source.

46. The system of claim 43, wherein the activating light source has a peak light intensity at a range of about 200 nm to about 300 nm.

47. The system of claim 43, wherein the activating light source comprises a substantially linear light element.

48. The system of claim 43, wherein the holder is configured to rotate up to about 1500 revolutions per minute.

49. The system of claim 38, further comprising a cover for covering the coating unit, wherein an activating light source for use with the coating unit is positioned on an inner surface of the cover.

50. The system of claim 38, wherein the lens curing unit comprises a first light source configured to generate and direct activating light toward at least one of the mold

members during use.

51. The system of claim 50, wherein the first light source is configured to direct activating light toward the first mold member, and wherein the lens curing unit further comprises a second light source configured to generate and direct activating light toward the second mold member.

52. The system of claim 50, further comprising a filter disposed directly adjacent to at least one of the mold members, the filter being configured to manipulate an intensity of the activating light directed toward the mold members during use.

53. The system of claim 52, wherein the filter is a hazy filter comprising a varying thickness such that the filter varies an intensity distribution of activating light directed across the mold members during use.

54. The system of claim 52, wherein the filter is a liquid crystal display filter.

55. The system of claim 38, further comprising an air distributor configured to apply air to the mold cavity to remove heat from the mold cavity during use.

56. The system of claim 50, wherein the first light source comprises a fluorescent light source configured to emit light at a wavelength of about 385 nanometers to 490 nanometers.

57. The system of claim 38, further comprising a post-cure unit, the post-cure unit configured to simultaneously apply heat and activating light to the interior of the post-cure unit.

58. The system of claim 57, wherein the post-cure unit comprises a fluorescent light.

59. The system of claim 57, wherein the post-cure unit comprises a heater, the heater configured to heat the interior of the post-cure unit to a temperature of up to about 125 °C.

60. The system of claim 38, further comprising a programmable controller configured to substantially simultaneously control operation of the coating unit and the lens curing unit during use.

61. The system of claim 38, further comprising a programmable controller configured to adjust a dose of the activating light reaching the mold member as a function of the temperature of the mold members.

62. The system of claim 38, further comprising a programmable controller configured to vary an intensity of the light as a function of the difference in the temperature of the molds over a period of time.

63. The system of claim 38, further comprising a programmable controller configured to control operation of the lens curing unit using a Proportional-Integral-Derivative control scheme.

64. The system of claim 38, further comprising a programmable controller and a light sensor configured to measure the dose of light transmitted to the mold cavity, wherein the light sensor is configured to communicate with the programmable controller, and wherein the programmable controller varies the intensity or duration of light such that a predetermined dose is transmitted to the mold cavity.

65. The system of claim 38, wherein the lens curing unit comprises a first light source and a second light source, and further comprising a programmable controller configured to individually control the first and second lights.

66. The system of claim 38, further comprising a cooling fan for cooling the mold members during use, a thermocouple for measuring a temperature of the mold members during use, and a programmable controller configured to operate the cooling fan in response to the temperature of the mold members.

67. The system of claim 38, wherein the coating unit is a spin-coating unit, and further comprising a programmable controller configured to control a rate of rotation of a holder of the spin coating unit.

68. The system of claim 38, further comprising a post-cure unit, the post-cure unit configured to simultaneously apply heat and activating light to the interior of the post-cure unit, and a programmable controller configured to substantially simultaneously operate the coating unit, the lens curing unit, and the post-cure unit.

69. The system of claim 38, further comprising a programmable controller configured to control operation of the lens curing unit as a function of the eyeglass lens prescription.

70. The system of claim 38, further comprising a liquid crystal display positioned between an activating light source and one of the mold members, and a programmable controller configured to change the liquid crystal display in response to the prescription of the eyeglass lens.

71. The system of claim 38, wherein the monomer comprises an aromatic containing bis(allyl carbonate)-functional monomer.

72. A system for preparing an eyeglass lens, comprising:

a first mold member having a casting face and a non-casting face;

a second mold member having a casting face and a non-casting face, the second mold member being adapted to be spaced apart from the first mold member during use such that the casting faces of the first mold member and the second mold member at least partially define a mold cavity;

a lens forming composition adapted to be disposed within the mold cavity during use, comprising:

a monomer that cures by exposure to activating light to form the eyeglass lens during use;

a photoinitiator that initiates curing of the monomer in response to being exposed to activating light during use;

a lens curing unit configured to cure at least a portion of a lens forming composition into the eyeglass lens by directing activating light toward mold members during use; and

a post-cure unit configured to apply heat and activating light to the eyeglass lens to substantially complete curing of the eyeglass lens during use.

73. The system of claim 72, wherein the lens forming composition further comprises

photochromic compounds.

74. The system of claim 72, wherein the lens forming composition further comprises ultraviolet/visible light absorbing compounds.

75. A system for preparing an eyeglass lens, comprising:

a first mold member having a casting face and a non-casting face;

a second mold member having a casting face and a non-casting face, the second mold member being adapted to be spaced apart from the first mold member during use such that the casting faces of the first mold member and the second mold member at least partially define a mold cavity;

a lens forming composition adapted to be disposed within the mold cavity during use, comprising:

a monomer that cures by exposure to activating light to form the eyeglass lens during use;

a photoinitiator that initiates curing of the monomer in response to being exposed to activating light during use;

a coating unit configured to produce a coating on at least one of the mold members or the eyeglass lens during use;

a lens curing unit configured to cure at least a portion of a lens forming composition into the eyeglass lens by directing activating light toward mold members during use;

a post-cure unit configured to apply heat and activating light to the eyeglass lens to substantially complete curing of the eyeglass lens during use; and

a programmable controller configured to substantially simultaneously control operation of the coating unit, the lens curing unit, and the post-cure unit during use.

76. The system of claim 75, wherein the lens forming composition further comprises photochromic compounds.

77. The system of claim 75, wherein the lens forming composition further comprises ultraviolet/visible light absorbing compounds.

78. A programmable logic controller for controlling a lens forming apparatus, the lens forming apparatus comprising:

a first mold member having a casting face and a non-casting face;

a second mold member having a casting face and a non-casting face, the second mold member being spaced apart from the first mold member during use such that the casting faces of the first mold member and the second mold member at least partially define a mold cavity;

a coating unit configured to produce a coating on at least one of the mold members or the eyeglass lens during use; and

a lens curing unit configured to direct activating light toward the mold members during use;

wherein the controller is configured to control the operation of the lens curing unit.

79. The controller of claim 78, wherein the controller is configured to substantially simultaneously control the operation of the coating unit and the lens curing unit.

80. The controller of claim 79, wherein the coating unit is a spin coating unit, and wherein the controller is configured to control the rotation of the holder during use.

81. The controller of claim 78, wherein the coating unit comprises a light source, and wherein the controller is configured to control the light source during use.

82. The controller of claim 78, wherein the controller is configured to measure the ambient room temperature, and wherein the controller is configured to determine the appropriate dose of light required to cure the lens forming composition, based on the ambient room temperature.

83. The controller of claim 78, wherein the controller is configured to adjust a dose of the activating light reaching the mold member as a function of the temperature of the mold members.

84. The controller of claim 78, wherein the controller is configured to vary an intensity of the light as a function of the difference in the temperature of the molds over a period of time.

85. The controller of claim 78, wherein the controller is configured to control operation of the lens curing unit using a Proportional-Integral-Derivative control

scheme.

86. The controller of claim 78, wherein the apparatus further comprises a light sensor configured to measure the dose of light transmitted to the mold cavity, and wherein the light sensor is configured to communicate with the controller, and wherein the controller varies the intensity or duration of light such that a predetermined dose is transmitted to the mold cavity.

87. The controller of claim 78, wherein the lens curing unit comprises a first light source and a second light source, and wherein the control unit is configured to individually control the first and second light sources.

88. The controller of claim 78, wherein the apparatus further comprises a cooling fan for cooling the mold members during use and a sensor for measuring a temperature of the mold members during use, and wherein the controller is configured to operate the cooling fan in response to the temperature of the mold members.

89. The controller of claim 78, wherein the controller is configured to determine when a lens curing process is complete by monitoring a temperature response of a lens forming composition during the application of activating light.

90. The controller of claim 78, further comprising a post-cure unit, the post-cure unit configured to simultaneously apply heat and activating light to the interior of the post-cure unit, and wherein the controller is configured to substantially simultaneously operate the coating unit, the lens curing unit, and the post-cure unit.

91. The controller of claim 78, wherein the control unit is configured to control

operation of the lens curing unit as a function of the eyeglass lens prescription.

92. The controller of claim 78, further comprising a liquid crystal display positioned between an activating light source and one of the mold members, and wherein the controller is configured to change the liquid crystal display in response to the prescription of the eyeglass lens.

93. The controller of claim 78, wherein the controller is configured to perform system diagnostic checks.

94. The controller of claim 78, wherein the controller is configured to notify the user when the system requires maintenance.

95. The controller of claim 78, wherein the controller is configured to display instructions for the operator during a lens forming process.

96. A programmable logic controller for controlling a lens forming apparatus, the lens forming apparatus comprising:

a first mold member having a casting face and a non-casting face;

a second mold member having a casting face and a non-casting face, the second mold member being spaced apart from the first mold member during use such that the casting faces of the first mold member and the second mold member at least partially define a mold cavity;

a coating unit configured to produce a coating on at least one of the mold members or the eyeglass lens during use;

a lens curing unit configured to direct activating light toward the mold members during use; and

a post-cure unit configured to apply heat and activating light to the eyeglass lens;

wherein the programmable logic controller is configured to substantially simultaneously control the operation of the coating unit, the lens curing unit, and the post-cure unit.

97. A gasket configured to engage a first mold set for forming a first lens of a first power, the gasket comprising at least four discrete projections for spacing mold members of a mold set, and wherein the projections are arranged on an interior surface of the gasket.

98. The gasket of claim 97, wherein the at least four discrete projections are evenly spaced around the interior surface of the gasket.

99. The gasket of claim 97, wherein the at least four discrete projections are spaced at about 90 degree increments around the interior surface of the gasket.

100. The gasket of claim 97, wherein the gasket is configured to engage a second mold set for forming a second lens of a second power.

101. The gasket of claim 97, wherein the gasket comprises a fill port for receiving a lens forming composition while the gasket is fully engaged to a mold set.

102. The gasket of claim 101, wherein the gasket further comprises an interior surface and an exterior surface, and wherein the fill port extends from the interior surface

of the gasket to the exterior surface.

103. An assembly for making plastic prescription lenses, comprising:

a first mold set for forming a first lens of a first power, the first mold set comprising a front mold member and a back mold member;

a gasket for engaging the first mold set, the gasket comprising at least four discrete projections for spacing the front mold member from the back mold member;

and wherein the front mold member, the back mold member, and the gasket at least partially define a mold cavity for retaining a lens forming composition.

104. The assembly of claim 103, wherein the back mold member comprises a steep axis and a flat axis, and wherein each of the at least four discrete projections forms an oblique angle with the steep axis and the flat axis of the back mold member.

105. The assembly of claim 103, wherein the back mold member comprises a steep axis and a flat axis, and wherein each of the at least four discrete projections forms an about 45 degree angle with the steep axis and the flat axis of the back mold member.

106. The assembly of claim 103, wherein the gasket is configured to engage a second mold set for forming a second lens of a second power.

107. The assembly of claim 103, wherein the gasket further comprises a fill port for receiving a lens forming composition while the gasket is fully engaged to the

mold set.

108. A method for making a plastic eyeglass lens, comprising:

engaging a gasket with a first mold set for forming a first lens of a first power, wherein the first mold set comprises a front mold member and a back mold member, and wherein the front mold member, the back mold member, and the gasket at least partially define a mold cavity for retaining a lens forming composition, and wherein the gasket comprises at least four discrete projections arranged on an interior surface thereof for spacing the first and second mold members;

introducing a lens forming composition into the mold cavity; and

curing the lens forming composition.

109. The method of claim 108, wherein the back mold member comprises a steep axis and a flat axis, and wherein engaging a gasket with a first mold set comprises positioning the first and second mold members such that the at least four discrete projections each form an oblique projection angle with the steep axis and the flat axis of the back mold member.

110. The method of claim 108, wherein the back mold member comprises a steep axis and a flat axis, and wherein engaging a gasket with a first mold set comprises positioning the back mold member such that the at least four discrete projections each form an about 45 degree projection angle with the steep axis and the flat axis of the back mold member.

111. The method of claim 108, further comprising:

removing the first mold set from the gasket; and

engaging the gasket with a second mold set for forming a second lens of a second power.

112. The method of claim 108, wherein the gasket further comprises a fill port for receiving a lens forming composition while the gasket is fully engaged to a mold set.

113. The method of claim 112, wherein the fill port extends from an interior surface to an exterior surface of the gasket.

114. A method of forming a non-photochromic lens under photochromic lens forming conditions comprising:

placing a liquid lens forming composition in a mold cavity defined by at least a first mold member and a second mold member, the lens forming composition comprising:

a monomer that cures by exposure to activating light to form the eyeglass lens during use;

an ultraviolet/visible light absorbing compound;

a co-initiator that activates curing of the monomer to form the eyeglass lens during use; and

a photoinitiator that is activated upon exposure to activating light; and

directing activating light toward the mold cavity, wherein the photoinitiator activates the co-initiator in response to being exposed to the activating light during use, and wherein activation of the co-initiator causes the lens forming composition to at least partially cure to form a non-photochromic lens during use.

115. The method of claim 114, further comprising applying a hydrophobic coat to the eyeglass lens, wherein the hydrophobic coating is adapted to inhibit the eyeglass lens from being exposed to water and to ambient oxygen.

116. The method of claim 114, wherein the first mold member comprises a casting face and a non-casting face, and further comprising placing a first hardcoat layer upon said casting face and a second hard coat layer upon said first hardcoat layer prior to placing the liquid lens forming composition in the mold cavity.

117. The method of claim 114, wherein the eyeglass lens is formed from the lens forming composition in a time period of less than about 30 minutes.

118. The method of claim 114, further comprising placing a filter substantially adjacent to at least one of the mold members, wherein the filter comprises a varying thickness such that the filter varies an intensity distribution of the activating light directed across the mold members.

119. The method of claim 114, further comprising placing a filter substantially adjacent to at least one of the mold members, wherein the filter comprises a varying transmissivity such that the filter varies an intensity distribution of the activating light directed across the mold members.

120. The method of claim 114, wherein the monomer comprises a polyethylenic-

functional monomer containing ethylenically unsaturated groups selected from acrylyl or methacrylyl.

121. The method of claim 114, wherein the photoinitiator forms a first polymer chain radical in response to being exposed to activating light, and wherein the first polymer chain radical reacts with the co-initiator, thereby forming a second polymer chain radical.

122. The method of claim 114, wherein the activating light has a wavelength in the range of about 380 to about 490 nanometers.

123. A filter for use in a lens forming apparatus, the filter comprising a liquid crystal display panel, positionable between an activating light source for producing activating light and a mold assembly, wherein the liquid crystal display is configured to vary an intensity of activating light when the activating light is directed toward the mold assembly.

124. The filter of claim 123, wherein the liquid crystal display panel is configured to produce a pattern of light and dark areas, wherein the dark areas reduce the intensity of the activating light reaching the mold assembly to a greater extent than the light areas.

125. The filter of claim 123, wherein the liquid crystal display panel is configured to produce a pattern of light and dark areas, and wherein the liquid crystal display panel is further configured to allow the pattern to be altered during a curing cycle.

126. The filter of claim 123, wherein the liquid crystal display panel is configured to produce a predetermined pattern of light and dark area, the predetermined pattern being selected based on a prescription of a lens defined by the mold assembly.

127. The filter of claim 123, wherein the liquid crystal display panel is configured to become substantially entirely darkened, such that the activating light is substantially inhibited from reaching the mold assembly.

128. The filter of claim 123, wherein the liquid crystal display panel is configured to be alternated between a transmissive state and a darkened state, such that pulses of activating light are directed toward the mold members.

129. The filter of claim 123, wherein the lens forming apparatus further comprises an additional mold assembly, and wherein the liquid crystal display panel is positioned between the activating light source and the additional mold assembly, and wherein the liquid crystal display panel is configured to produce a first pattern of light and dark areas between the activating light source and the mold assembly, and wherein the liquid crystal display panel is configured to produce a second pattern of light and dark areas between the activating light source and the additional mold assembly.

130. The filter of claim 129, wherein the first and second patterns are independently variable during a curing cycle.

131. The filter of claim 123, wherein the liquid crystal display pattern is configured to be connected to a controller, the controller being configured to alter a pattern of light and dark areas displayed on the liquid crystal display panel in response to lens curing conditions.

132. A method of forming a plastic eyeglass lens comprising:

placing a liquid lens forming composition in a mold cavity defined by at least a first mold member and a second mold member, the lens forming composition comprising:

a monomer that cures by exposure to activating light to form the eyeglass lens during use;

a photoinitiator that initiates curing of the monomer in response to being exposed to activating light during use;

directing activating light toward the mold cavity, the activating light causing the lens forming composition to at least partially cure; and

filtering the activated light with a filter, the filter comprising a liquid crystal display panel, wherein the liquid crystal display panel is configured to vary an intensity of activating light as the activating light is directed toward the mold members.

133. The method of claim 132, wherein filtering the activated light comprises forming a pattern of light and dark areas on the liquid crystal display panel, wherein the dark areas reduce the intensity of the activating light reaching the mold assembly to a greater extent than the light areas.

134. The method of claim 133, further comprising altering the pattern while light is directed toward the mold cavity.

135. The method of claim 132, wherein filtering the activated light comprises forming a predetermined pattern of light and dark areas on the liquid crystal display panel,

the predetermined pattern being selected based on a prescription of a lens defined by the mold cavity.

136. The method of claim 132, wherein filtering the activated light comprises substantially darkening the potion of the liquid crystal display panel between the mold cavity and the activating light, such that the activating light is substantially inhibited from reaching the mold assembly.

137. The method of claim 132, wherein filtering the activated light comprises alternating the liquid crystal display panel between a transmissive state and a darkened state such that pulses of activating light are directed toward the mold members.

138. The method of claim 132, wherein filtering the activating light comprises producing a pattern of light and dark areas on the liquid crystal display panel and altering the pattern in response to lens curing conditions.

139. The method of claim 132, wherein the altering of the pattern is performed by a controller coupled to the liquid crystal display panel.

140. A composition curable by exposure to activating light to form a photochromic plastic eyeglass lens, the composition comprising:

a monomer that cures by exposure to activating light to form the eyeglass lens during use;

a photoinitiator that initiates curing of the monomer in response to being exposed to activating light during use;

a first photochromic composition adapted, when cured in an eyeglass lens and subsequently exposed to photochromic activating light during use, to exhibit a first color;

a second photochromic composition adapted, when cured in an eyeglass lens and subsequently exposed to photochromic activating light during use, to exhibit a second color;

a light effector composition, wherein the light effector composition is adapted to affect the activated color of the photochromic plastic eyeglass lens such that the photochromic plastic eyeglass lens, when exposed to photochromic activating light, selectively exhibits the first color, the second color, or a third color during use.

141. The composition of claim 140, wherein the light effector composition selectively affects the absorptivity of the first photochromic composition or the second photochromic composition to cause the eyeglass lens, when exposed to photochromic activating light, to exhibit a predetermined color.

142. The composition of claim 140, wherein the light effector composition selectively affects the absorptivity of the first photochromic composition and the second photochromic composition to cause the eyeglass lens, when exposed to photochromic activating light, to exhibit a predetermined color.

143. The composition of claim 140, wherein the light effector composition comprises a photoinitiator.

144. The composition of claim 140, wherein the light effector composition comprises a non-photochromic ultraviolet/visible light absorber.

145. The composition of claim 140, wherein the light effector composition comprises a non-photochromic dye.

146. The composition of claim 140, wherein the light effector composition comprises an ultraviolet light stabilizer.

147. The composition of claim 140, wherein the first and second photochromic compositions comprise a spirooxazine, a spiropyran, a spironaphthoxazine, a spiropyridobenzoxazine, a spirobenzoxazine, a napthopyran, a benzopyran, a spironapthopyran, an indolinospironapthoxazine, an indolinospironapthopyran, a diarylnapthopyran, an organometallic, or a phenylmercury.

148. The composition of claim 140, wherein the monomer comprises a polyethylenic-functional monomer containing ethylenically unsaturated groups selected from acrylyl or methacrylyl.

149. The composition of claim 140, wherein the monomer comprises an aromatic containing bis(allyl carbonate)-functional monomer.

150. The composition of claim 140, wherein the first photochromic composition comprises Reversacol Sea Green and the second photochromic composition comprises Reversacol Berry Red.

151. The composition of claim 150, wherein the light effector composition comprises monomethylether hydroquinone, and wherein the eyeglass lens, when exposed to photochromic activating light, selectively exhibits a brown color.

152. The composition of claim 150, wherein the light effector composition comprises a

mixture of 2-[4-((2-hydroxy-3-dodecyloxypropyl)-oxy)-2-hydroxyphenyl]-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine and 2-[4-((2-hydroxy-3-tridecyloxypropyl)-oxy]-2-hydroxyphenyl]-4,6-bis(2,4-dimethylpheyl-1,3,5-triazine, and wherein the eyeglass lens, when exposed to photochromic activating light, selectively exhibits an aqua-green color.

153. The composition of claim 150, wherein the light effector composition comprises 2-isopropyl-thioxanthone, and wherein the eyeglass lens, when exposed to photochromic activating light, selectively exhibits a yellow-green color.

154. The composition of claim 150, wherein the light effector composition comprises 2-benzyl-2-N,N-dimethylamino-1-(4-morpholinophenyl)-1-butanone, and wherein the eyeglass lens, when exposed to photochromic activating light, selectively exhibits a green color.

155. A composition curable by exposure to activating light to form a photochromic plastic eyeglass lens, the composition comprising:

a monomer that cures by exposure to activating light to form the eyeglass lens during use;

a photoinitiator that initiates curing of the monomer in response to being exposed to activating light during use;

a first photochromic composition adapted, when cured in an eyeglass lens and subsequently exposed to photochromic activating light during use, to exhibit a first color;

a second photochromic composition adapted, when cured in an eyeglass lens and subsequently exposed to photochromic activating light during use, to exhibit a second color;

a light effector composition, wherein the light effector composition is adapted to affect the activated color of the photochromic plastic eyeglass lens such that the photochromic plastic eyeglass lens, when exposed to photochromic activating light, selectively exhibits a third color which substantially differs from the first and second colors during use.

~~156.~~ A composition curable by exposure to activating light to form a photochromic plastic eyeglass lens, the composition comprising:

a monomer composition comprising an aromatic containing bis(allyl carbonate)-functional monomer;

a co-initiator composition configured to activate curing of the monomer composition to form the eyeglass lens during use comprising an acrylated amine; and

a photoinitiator configured to activate the co-initiator composition in response to being exposed to activating light during use; and

a dye composition adapted to, when cured in an eyeglass lens, cause the eyeglass lens to exhibit a second color; and

wherein the dye composition acts as a light effector composition on the photochromic composition such that the photochromic activity of the photochromic compound is reduced, and wherein a color of the

photochromic plastic eyeglass lens, when exposed to activating light, exhibits a third color.

157. A method of altering an activated color of a photochromic lens comprising:

mixing a first photochromic composition adapted, when cured in an eyeglass lens and subsequently exposed to photochromic activating light during use, to exhibit a first color, with a second photochromic composition adapted, when cured in an eyeglass lens and subsequently exposed to photochromic activating light during use, to exhibit a second color, to form a first polymerizable lens forming composition;

adding a light effector composition to the polymerizable lens forming composition to form a second polymerizable lens forming composition; and

curing the second polymerizable lens forming composition to form an eyeglass lens;

wherein the activated color of the eyeglass lens differs from an activated color of an eyeglass lens formed from the first polymerizable lens forming composition.

158. A kit for preparing a composition curable by exposure to activating light to form a photochromic plastic eyeglass lens, the kit comprising:

a base composition comprising:

a monomer that cures by exposure to activating light to form the eyeglass lens during use; and

a photoinitiator that initiates curing of the monomer in response to being exposed to activating light during use;

a first photochromic composition adapted, when cured in an eyeglass lens and subsequently exposed to photochromic activating light during use, to exhibit a first color;

a second photochromic composition adapted, when cured in an eyeglass lens and subsequently exposed to photochromic activating light during use, to exhibit a second color;

at least two light effector compositions;

wherein a first light effector composition is adapted, when mixed with the first photochromic composition, the second photochromic composition, and the base composition, and after such mixture is cured to form an eyeglass lens, to affect the activated color of the eyeglass lens such that the eyeglass lens, when exposed to photochromic activating light, selectively exhibits a third color during use;

and wherein a second light effector composition is adapted, when mixed with the first photochromic composition, the second photochromic composition, and the base composition, and after such mixture is cured to form an eyeglass lens, to affect the activated color of the eyeglass lens such that the eyeglass lens, when exposed to photochromic activating light, selectively exhibits a fourth color during use.

159. A lens forming composition curable upon exposure to activating light to form a plastic eyeglass lens, comprising:

a monomer composition comprising an aromatic containing polyethylenic polyether functional monomer; and

a photoinitiator configured to initiate polymerization of the monomer composition in response to being exposed to activating light during use.

160. The lens forming composition of claim 159 wherein the aromatic containing polyethylenic polyether functional monomer comprises an aromatic containing polyether polyethylenic functional monomer containing at least one group selected from acrylyl or methacrylyl.

161. The lens forming composition of claim 159 wherein the aromatic containing polyethylenic polyether functional monomer comprises an ethoxylated bisphenol A containing at least one group selected from acrylyl or methacrylyl.

162. The lens forming composition of claim 159 wherein the aromatic containing polyethylenic polyether functional monomer comprises an ethoxylated bisphenol A di(meth)acrylate.

163. The lens forming composition of claim 159 wherein the aromatic containing polyethylenic polyether functional monomer comprises ethoxylated 4 bisphenol A dimethacrylate.

164. The lens forming composition of claim 159 wherein the monomer composition further comprises a polyethylenic functional monomer.

165. The lens forming composition of claim 164 wherein the polyethylenic functional

monomer comprises tris(2-hydroxyethyl)isocyanurate triacrylate, ethoxylated 10 bisphenol A dimethacrylate, ethoxylated 4 bisphenol A dimethacrylate, dipentaerythritol pentaacrylate, 1,6-hexanediol dimethacrylate, isobornyl acrylate, bisphenol A bis allyl carbonate, pentaerythritol triacrylate or mixtures thereof.

166. The lens forming composition of claim 159 wherein the aromatic containing polyethylenic polyether functional monomer comprises an ethoxylated bisphenol A di(meth)acrylate, and wherein the monomer composition further comprises a polyethylenic functional monomer.

167. The lens forming composition of claim 159 wherein the aromatic containing polyethylenic polyether functional monomer comprises an ethoxylated bisphenol A di(meth)acrylate, and wherein the monomer composition further comprises a polyethylenic functional monomer, and wherein the polyethylenic functional monomer comprises tris(2-hydroxyethyl)isocyanurate triacrylate, ethoxylated 10 bisphenol A dimethacrylate, ethoxylated 4 bisphenol A dimethacrylate, dipentaerythritol pentaacrylate, 1,6-hexanediol dimethacrylate, isobornyl acrylate, bisphenol A bis allyl carbonate, pentaerythritol triacrylate or mixtures thereof.

168. The lens forming composition of claim 159, further comprising a co-initiator composition, wherein the co-initiator composition comprises an amine.

169. The lens forming composition of claim 159, further comprising a co-initiator composition, wherein the co-initiator composition comprises an acrylyl amine.

170. The lens forming composition of claim 159, further comprising a co-initiator composition, wherein the co-initiator composition comprises an ethanol amine.

171. The lens forming composition of claim 159, further comprising a co-initiator

composition, wherein the co-initiator composition comprises an aromatic amine.

172. The lens forming composition of claim 159, further comprising a co-initiator composition, wherein the co-initiator composition comprises an acrylyl amine, the acrylyl amine comprising monoacrylated amines, diacrylated amines, or mixtures thereof.

173. The lens forming composition of claim 159, further comprising a co-initiator composition, wherein the co-initiator composition comprises CN 384 and CN-386.

174. The lens forming composition of claim 159, further comprising a co-initiator composition, wherein the co-initiator is an amine, and wherein an amount of the co-initiator composition in the lens forming composition ranges from about 500 ppm to about 7% by weight.

175. The lens forming composition of claim 159 wherein the photoinitiator composition comprises bis(2,6-dimethoxybenzoyl)-(2,4,4-trimethylphenyl)phosphine oxide.

176. The lens forming composition of claim 159 wherein the photoinitiator composition comprises bis(2,6-dimethoxybenzoyl)-(2,4,4-trimethylphenyl)phosphine oxide and 1-hydroxycyclohexylphenyl ketone.

177. The lens forming composition of claim 159 wherein an amount of the photoinitiator composition in the lens forming composition ranges from about 50 ppm to about 0.5 %.

178. The lens forming composition of claim 159 further comprising a co-initiator,

wherein the photoinitiator composition comprises bis(2,6-dimethoxybenzoyl)-(2,4,4-trimethylphenyl)phosphine oxide and 2-isopropylthioxanthone.

179. The lens forming composition of claim 159 further comprising a co-initiator, wherein the photoinitiator composition comprises bis(2,6-dimethoxybenzoyl)-(2,4,4-trimethylphenyl)phosphine oxide.

180. The lens forming composition of claim 159 wherein the photoinitiator composition comprises bis(2,6-dimethoxybenzoyl)-(2,4,4-trimethylphenyl)phosphine oxide and 2-isopropylthioxanthone.

181. The lens forming composition of claim 159 further comprising a co-initiator, wherein the photoinitiator composition comprises 2-isopropylthioxanthone.

182. The lens forming composition of claim 159, further comprising an activating light absorbing compound.

183. The lens forming composition of claim 159, further comprising a photochromic compound.

184. The lens forming composition of claim 159, further comprising a photochromic compound, and wherein the photochromic compound comprises a spirooxazine, spiropyrans, spironaphthoxazines, spiropyridobenzoxazines, spirobenzoxazines, napthopyrans benzopyrans, spironapthopyrans, indolinospironapthoxazines, indolinospironapthopyrans, diarylnapthopyrans, organometallic, or phenylmercury.

185. The lens forming composition of claim 159, further comprising a photochromic composition, wherein the photochromic composition comprises Corn Yellow,

Berry Red, Sea Green, Plum Red, Variacrol Yellow, Palatinate Purple, CH-94, Variacrol Blue D, Oxford Blue , CH-266 or mixtures thereof.

186. The lens forming composition of claim 159, further comprising a photochromic compound, and wherein an amount of photochromic compound in the lens forming composition ranges from about 50 ppm to about 1000 ppm.

187. The lens forming composition of claim 159, further comprising an ultraviolet absorbing compound for inhibiting at least a portion of ultraviolet light from being transmitted through the eyeglass lens during use.

188. The lens forming composition of claim 159, further comprising an ultraviolet absorbing compound for inhibiting at least a portion of ultraviolet light from being transmitted through the eyeglass lens during use, wherein the ultraviolet absorbing compound comprises 2-(2H benzotriazole-2-yl)-4-(1,1,3,3-tetramethylbutyl)phenol, 2-hydroxy-4-methoxybenzophenone, mixtures of 2-[4-((2-hydroxy-3-dodecyloxypropyl)-oxy)-2-2-hydroxyphenyl]-4,6-bis(2,4-dimethylphenyl)-1,3,5-triazine and 2-[4-((2-hydroxy-3-tridecyloxypropyl)-oxy)-2-hydroxyphenyl]-4,6-bis(2,4-dimethylpheyl)-1,3,5-triazine, mixtures of poly (oxy-1,2-ethanediyl) and α-(3-(3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl)-1-oxopropyl)-γ-hydroxy, α-(3-(3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl)-1-oxopropyl)-γ-(3-(3-(2H-benzotriazol-2-yl)-5-(1,1-dimethylethyl)-4-hydroxyphenyl)-1-oxopropoxy), 2-(2-hydroxy-5-methylphenyl) benzotriazole, ethyl-2-cyano-3,3-diphenylacrylate, or phenyl salicylate.

189. The lens forming composition of claim 159, further comprising an ultraviolet absorbing compound for inhibiting at least a portion of ultraviolet light from being transmitted through the eyeglass lens during use, wherein the ultraviolet absorbing compound comprises 2-(2H-benzotriazole-2-yl)-4-(1,1,3,3-

tetramethylbutyl)phenol.

190. The lens forming composition of claim 159, further comprising an UV absorbing composition for inhibiting at least a portion of ultraviolet light from being transmitted through the eyeglass lens during use, wherein the UV absorbing composition comprises a photoinitiator and a UV absorbing compound.

191. The lens forming composition of claim 159, further comprising a dye to form a background color within the lens.

192. The lens forming composition of claim 159 further comprising a UV stabilizer for inhibiting degradation of the cured monomer caused by exposure to ultraviolet light.

193. The lens forming composition of claim 159 wherein the lens forming composition is curable to a substantially aberration free lens in less than about 30 minutes.

194. A method for making a plastic eyeglass lens, comprising:

placing a liquid lens forming composition in a mold cavity defined by at least a first mold member and a second mold member, the lens forming composition comprising:

a monomer composition comprising an aromatic containing polyethylenic polyether functional monomer; and

a photoinitiator configured to initiate polymerization of the monomer composition in response to being exposed to activating light during use; and

directing activating light toward at least one of the mold members to cure the lens forming composition to form the eyeglass lens.

195. The method of claim 194 wherein curing the lens forming composition comprises polymerizing the monomer composition.

196. The method of claim 194 wherein directing activating light to the lens forming composition comprises applying a plurality of activating light pulses to the lens forming composition.

197. The method of claim 194, further comprising applying a hydrophobic coating to the eyeglass lens.

198. The method of claim 194, further comprising applying a hydrophobic coating to the eyeglass lens, wherein the hydrophobic coating is adapted to inhibit the eyeglass lens from being exposed to water and to ambient oxygen.

199. The method of claim 194 wherein the first mold member comprises a casting face and a non-casting face, and further comprising placing a first hardcoat layer upon said casting face and a second hardcoat layer upon said first hardcoat layer prior to placing the liquid lens forming composition in the mold cavity.

200. The method of claim 194 wherein the second mold member comprises a casting face and a non-casting face, and further comprising placing a material capable of being tinted upon the casting face prior to placing the liquid lens forming composition in the mold cavity.

201. The method of claim 194 wherein the second mold member comprises a casting face and a non-casting face, and further comprising placing a material capable of being tinted upon the casting face prior to placing the liquid lens forming composition in the mold cavity, and further comprising applying dye to the material to tint the lens forming composition.

202. The method of claim 194, further comprising applying an adhesion-promoter coating to an inner surface of the first mold member and an inner surface of the second mold member to substantially adhere the lens forming composition to the first and second mold members during use.

203. The method of claim 194 wherein the activating light is removed from the mold members when substantially all of the lens forming composition has reached its gel point.

204. The method of claim 194 wherein the activating light comprises a first intensity, and herein the activating light is directed toward at least one of the mold members until substantially all of the lens forming composition has reached its gel point, and further comprising directing activating light having a second intensity towards at least one mold member to cure substantially all of the lens forming composition, the first intensity being greater than the second intensity.

205. The method of claim 194 wherein the activating light is directed toward at least one of the mold members until substantially all of the lens forming composition has reached its gel point, and further comprising inhibiting the activating light from further being directed toward the mold members, thereby allowing substantially all of the lens forming composition to cure.

13 1

~~206.~~ The method of claim ~~194~~ wherein the eyeglass lens is formed from the lens forming composition in a time period of less than about 10 minutes.

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~~207.~~ The method of claim ~~194~~ wherein the eyeglass lens is formed from the lens forming composition in a time period of less than about 30 minutes.

15 1

~~208.~~ The method of claim ~~194~~ wherein the first mold member is spaced apart from the second mold member by a gasket, and further comprising removing the gasket subsequent to directing activating light to at least one of the mold members to expose the lens forming composition to ambient air for approximately 5 to 30 minutes, thereby cooling the lens forming composition, and further comprising directing additional activating light toward at least one of the mold members to at least partially cure the lens forming composition.

16 1

~~209.~~ The method of claim ~~194~~, further comprising heating the cured lens forming composition to a temperature between approximately 100°C to 120°C for approximately 3 to 15 minutes subsequent to curing the lens forming composition.

17 1

~~210.~~ The method of claim ~~194~~, further comprising placing a filter substantially adjacent to at least one of the mold members, wherein the filter comprises a varying thickness such that the filter varies an intensity distribution of activating light across the mold members.

18 1

~~211.~~ The method of claim ~~194~~ wherein an amount of activating light is directed towards the mold cavity, and wherein the mold cavity comprises a temperature, and wherein the amount of activating light directed to the mold cavity is a function of the temperature of at least a portion of the mold cavity.

19 1

212. The method of claim ~~194~~ wherein directing light to the lens forming composition comprises applying a number of activating light pulses to the lens forming composition, wherein the number of light pulses is a function of a change in a temperature of the lens forming composition over a period of time.

20 1

~~213~~. The method of claim ~~194~~ wherein directing light to the lens forming composition comprises applying a plurality of activating light pulses to the lens forming composition, wherein a duration of the light pulses is a function of a change in a temperature of the lens forming composition over a period of time.

21 1

~~214~~. The method of claim ~~194~~ wherein directing light to the lens forming composition comprises applying a plurality of activating light pulses to the lens forming composition, wherein an intensity of the light pulses is a function of a change in a temperature of the lens forming composition over a predetermined period of time.

215. A lens made by the method of claim 194.

~~216~~. A lens forming composition curable upon exposure to activating light to form a plastic eyeglass lens, comprising:

a monomer composition comprising an aromatic containing polyether polyethylenic functional monomer containing groups selected from acrylyl or methacrylyl;

a co-initiator composition configured to activate curing of the monomer composition to form the eyeglass lens during use, the co-initiator comprising an acrylyl amine; and

a photoinitiator configured to activate the co-initiator composition in

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response to being exposed to activating light during use.

217. A method for making a plastic eyeglass lens, comprising:

placing a liquid lens forming composition in a mold cavity defined by at least a first mold member and a second mold member, the lens forming composition comprising:

a monomer composition comprising an aromatic containing polyether polyethylenic functional monomer containing groups selected from acrylyl or methacrylyl;

a co-initiator composition configured to activate curing of the monomer composition to form the eyeglass lens during use, the co-initiator composition comprising an acrylyl amine; and

a photoinitiator configured to activate the co-initiator composition in response to being exposed to activating light during use; and

directing activating light toward at least one of the mold members to cure the lens forming composition to form the eyeglass lens.

218. A lens forming composition curable upon exposure to activating light to form a plastic eyeglass lens, comprising:

a monomer composition comprising an aromatic containing polyether polyethylenic functional monomer containing groups selected from acrylyl or methacrylyl; and

a photoinitiator configured to initiate polymerization of the monomer composition in response to being exposed to activating light during use.

219. A lens forming composition curable upon exposure to activating light to form a plastic eyeglass lens, comprising:

a monomer composition comprising an aromatic containing polyether polyethylenic functional monomer;

a co-initiator composition configured to activate curing of the monomer composition to form the eyeglass lens during use, the co-initiator composition comprising an amine; and

a photoinitiator configured to activate the co-initiator composition in response to being exposed to activating light during use.

220. The lens forming composition of claim 219, further comprising an activating light absorbing composition.

221. The lens forming composition of claim 219 wherein the photoinitiator composition is configured to form a polymer chain radical in response to being exposed to ultraviolet light during use, and wherein the polymer chain radical reacts with the co-initiator composition to form a monomer initiating species during use, and wherein the polymer chain radical and the monomer initiating species react with the monomer composition to polymerize the monomer composition during use.